Fermilab Video Conferencing

Briefing to CD Management

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Video Conferencing Summary

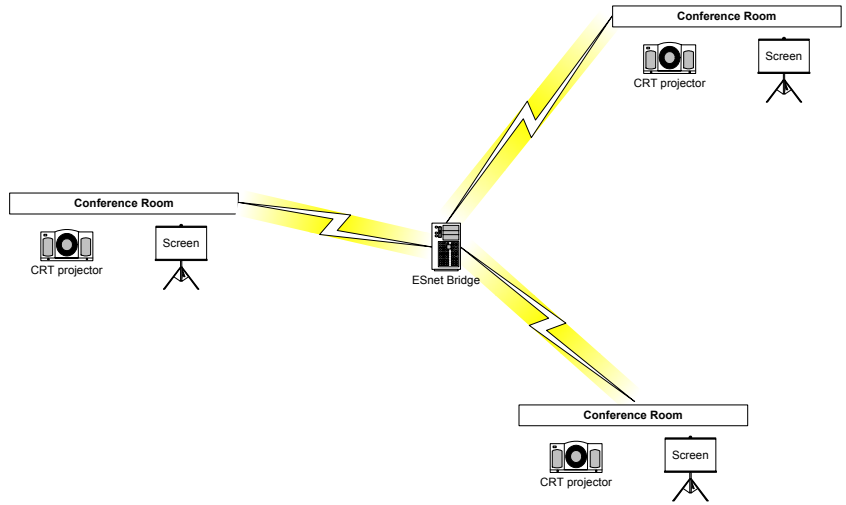
- Current technology;
- Current personnel, roles and responsibilities;
- Current operations, scheduling and installations;
- Current upgrades and projects in queue;
- Current investigations and technology R&D;
- Usage statistics (ISDN and IP);
- Areas of expertise and future operations;
- Operations, documentation and support issues.

Video Conferencing Technologies

- Room based:
  - IP (H.323, ESnet, VRVS);
  - ISDN (being phased out);
  - Hardware based (Polycom, Tandberg, etc.).
  - Significant ancillary equipment (microphones and speakers, audio processors, projectors and/or monitors, cameras, etc.).
- Desktop based:
  - IP only;
  - Hardware (Polycom ViaVideo, Tandberg 1000);
  - Software (NetMeeting, CuSeeMe, etc.).

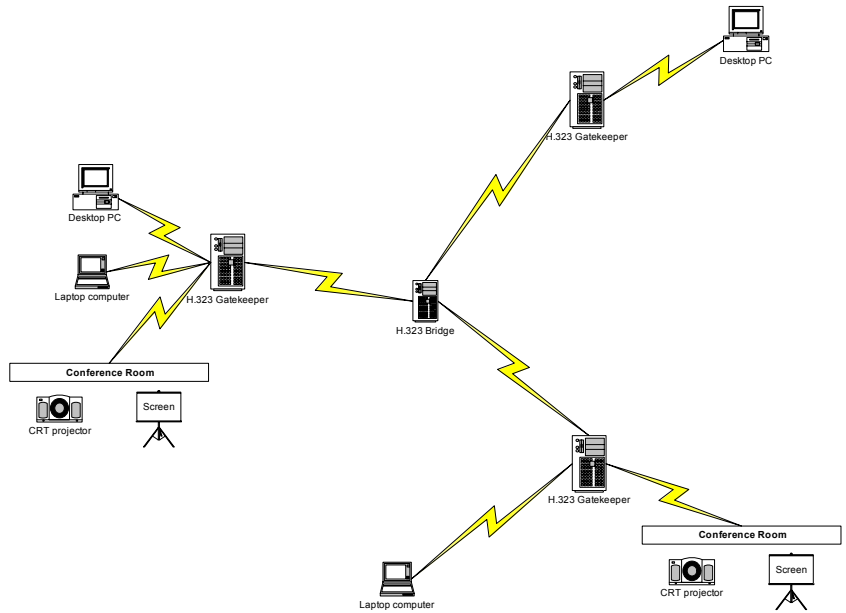
Video Conferencing ISDN (H.320)

- Room to Room only
- Polycom ViewStation
- Tandberg
- Etc.



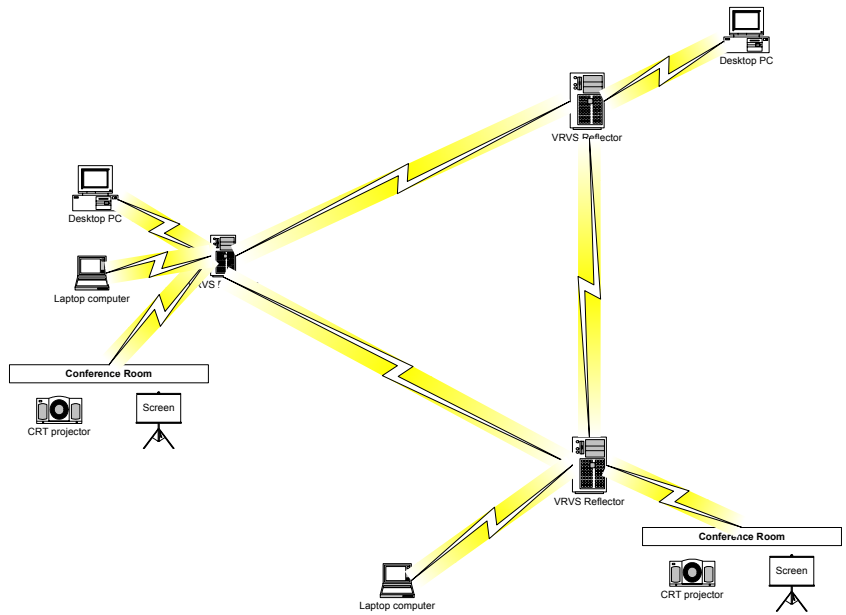
Video Conferencing ESnet IP & H.323

- Supports both Room and Desktop.
- Polycom Viewstation
- Polycom ViaVideo
- NetMeeting
- CuSeeMe
- Etc.



Video Conferencing VRVS IP & H.323

- Supports both Room and Desktop.
- Uses H.323 and Mbone tools (vic, vat, rat)
- Polycom ViewStations
- NetMeeting, CuSeeMe
- ViaVideo
- ViewStation
- Tandberg 1000
- Etc.



Video Conferencing Desktop

- Person to person (video phone call);
- One to many (give a lecture);
- Watch a presentation (observe a lecture);
- Not a substitute for all face-to-face meetings;
- Significant application and system issues;
- No clear “best” client or set of tools;
- An area where they is likely to be explosive growth as soon as the right set of tools come along.

Video Conferencing Support Personnel

- Sheila Cisko: Video Conference Coordinator - Scheduling, video conf. customer service, conference room appointment coordination, training, consultant to offsite users involved in FNAL mtgs.(1 FTE);
- Keith Chadwick: consults on equipment, networking, multimedia, audio (5-10% of FTE);
- Al Thomas: advise on equipment networking, multimedia and audio (5% of FTE);
- CCF/DCI: Video conference room cabling infrastructure, engineering (~25% FTE in 2003).

Video Conferencing CCF/DCI Personnel

- Install audio and video conference equipment and related communications infrastructure in on-site conference rooms;
- Provide connectivity support for those rooms;
- Provide design assistance and coordination with onsite clients;
- Write up technical specifications for wiring and equipment installation if outside contractor is required;
- Video conferencing estimates and installations are being delayed – effort is preempted by higher priority networking installations.

Video Conferencing Current Operations

- Reserve video conf resources (scheduling FNAL endpoints for multipoint meetings);
- Troubleshoot video conferences; including FNAL & offsite rooms involved in FNAL meetings & bridge personnel (ESnet, VRVS or DoE EM);
- Appoint (with DCI) new FNAL rooms with video conf gear and related multimedia, as requested from division HQs;
- Train users and FNAL support personnel to use video conf equipment;
- Consult with on- and off-site users in technology and equipment;
- Maintain documentation of room systems, codec firmware, utilization and ISDN charges.

Video Conferencing Scheduling

- ESnet DCS to ECS scheduler cutover January 31, 2004. As DCS power user, we have joined ESnet et al in the beta testing of ECS scheduler. Considerable consulting effort to on and off-site users regarding scheduler changes and ISDN to IP migration.
- ECS will not (initially) have schedulable IP multipoint capability, but we'll use the email features for notifying users of Ad-hoc bridge numbers.
- Lost official back-up Fermilab scheduling support in December.

Video Conferencing Installations and Upgrades

- Currently Fermilab has 19 video conferencing rooms at FNAL (list on next slide);
- New systems installed within the last FY were: SiDet, WH8X (replacing WH12NW), PPD/D0, CDF/B02, PPD/EPP roll-about (latter two IP only);
- Upgrades for PPD/CMS Project Office room were completed in April;
- Video and audio upgrades to CDF/B02 Theater conference room were completed in August.

Video Conferencing Room Locations

Location	Landlord	Support Load	Schedule Load
WH2NW-Black Hole	Directorate	low	high
WH6W-CMS Project Office	CMS	low	low
WH7X-Racetrack	Directorate	high	high
WH8X-Hornets' Nest	PPD	high	high
WH9E-CMS	CMS	low	low
WH10NW-West Wing	PPD	low	high
WH10X-rollabout	PPD/EPP	low	low
B0-Pump Room	CDF	low	high
B0-Theater	CDF	low	high
B0-Trailer	CDF	low	med
B0-Cloud Chamber	CDF	low	low
DAB2 Hurricane Deck	D0	high	high
DAB Kitchen	D0	low	low
D0 Trailer151-Far Side	D0	high	high
D0 Trailer151-Dog House	D0	high	high
Industrial Center Bldg	TD	low	med
SiDet AB Bridge	PPD	low	low
FCC1	CD	high	low
FCC2a	CD	high	med

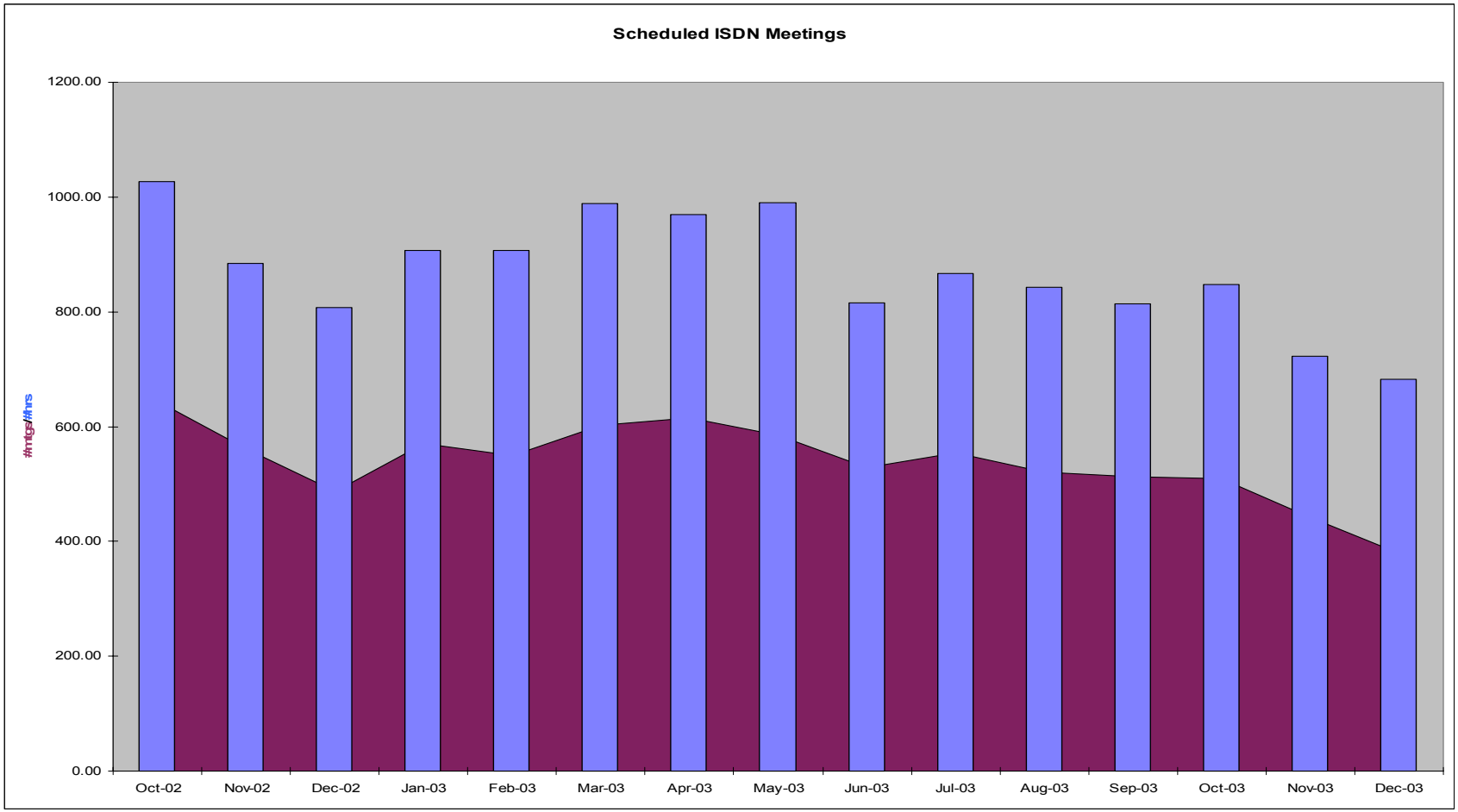
Video Conferencing Projects in Queue

- Installation of new gear in DAB3 conference room scheduled for soon (D0);
- Upgrade audio in WH2NW (Directorate);
- Appoint WH2NE with video conferencing (Directorate);
- Appoint X-Gallery Huddle Conf. Room with video conferencing (Accelerator Division);
- WH1W (not an official request yet, but…);
- In addition, we have ongoing upgrades or equipment installations in existing rooms (FCC1, WH8X, etc);
- Video streaming technology evaluation;
- "Forklift" upgrade of existing FNAL VRVS Reflector system.

Video Conferencing Investigations and Technology R&D

- CMS Virtual Control Room Project, participants include Data Communications and PPD/CMS. At present we're determining best equipment for the testbed;
- Video conference technology and tools:
  - H.264 (higher speed v/c with mpeg);
  - Desktop collaboration tools (H.323, Polycom ViaVideo, Microsoft NetMeeting, T.120, etc.).
- Audio and video technology and equipment;
- Video Streaming.

Video Conferencing ISDN Statistics



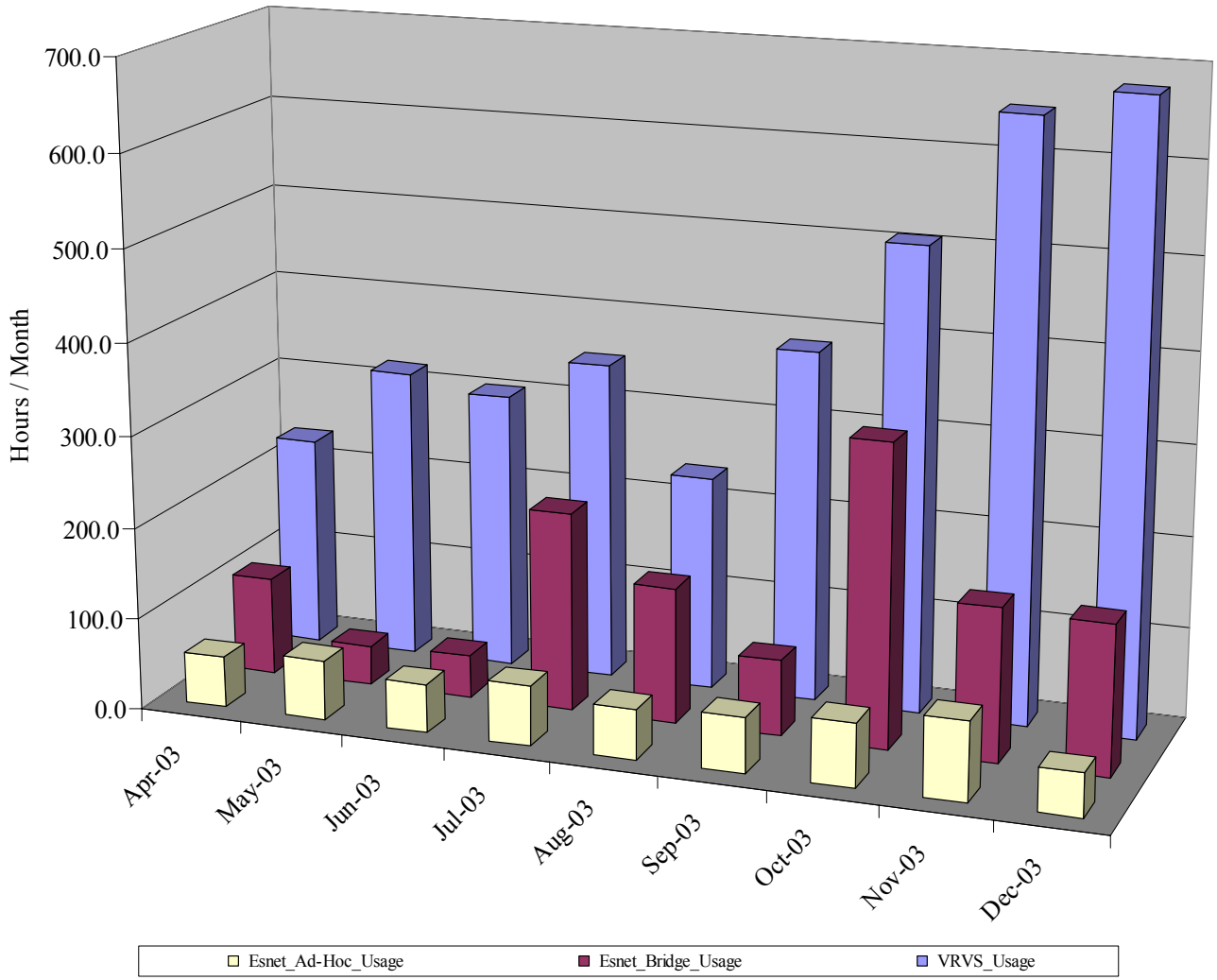
Video Conferencing Statistics (IP/H.323)

- Today - Out of ~175 standing FNAL conference room meetings 30 are (or should be) point-to-point H.323.
- Meetings currently using ESnet Ad-Hoc:
  - D0 Muon ID, D0-BID, D0/Dutch
  - CDF DB
  - CD/Sam
  - BTeV
  - Dark Camera
  - MiniBoone
  - Other?

Video Conferencing Statistics (VRVS)

- VRVS Call Record Detail statistics released staring in November 2003;
- November 2003
  - Estimate 51 meetings for a total of 213 hours.
- December 2003
  - Estimate 61 meetings for a total of 483 hours.

Video Conferencing IP Statistics (from netflow)



Video Conferencing Areas of Expertise

- Design of video conferencing rooms;
- Operation of Polycom and ancillary audio/visual processing equipment;
- Support of standards based videoconferencing (H.323);
- Technology R&D.

Video Conferencing Future Operations

- Current operations plus increased number of FNAL rooms; ~2 added per year;
- Deployment of production video streaming capacity;
- Eventual deployment and operation of FNAL IP Gatekeeper for management of room and desktop endpoints.

Video Conferencing Operations Issues

- Need back up operations support, especially scheduling assistance.
  - Helpdesk?
  - Part time from CCF or other department?
- Video conference room installation and appointment:
  - DCI?
  - Subcontractors?
- Problem diagnosis;
- Should written MOUs be required between divisions for v/c room requests rather than verbal agreements?

Video Conferencing Documentation Issues

- Need to improve video conferencing documentation (including procedures, room lists, room wiring, equipment configuration, etc.);
- Need to improve video conferencing web pages:
  - update request form to include IP;
  - create teleconference request form.

Video Conferencing Support Issues

- Local Polycom Management;
- Video Streaming;
- Level of VRVS support;
- DoE ESnet ECS scheduler;
- Access Grid support at FNAL;
- Deployment of FNAL Gatekeeper.

Video Conferencing Local Polycom Management

- In theory local Polycom management (firmware upgrades, call lists, etc.) is supposed to be handled by local support personnel;
- In practice it is done by Video Conference Coordinator;
- VCC also being used as the first contact in the event of problems (rather than local support personnel).
- Some local support personnel have other commitments which preclude their room support role;
- Polycom Global Management software can allow VCC to centrally manage Video conference Polycoms (software $5K + system to run on $2-3K).

Video Conferencing
Video Streaming

- Loaner video streaming device from Video Furnace will be arriving for testing soon;
- Our plans are to establish this as a “virtual” video conference room (utilizing our spare Polycom VS4000), which will be schedulable through the ESnet ECS;
- Users will be able to “automatically” arrange for video streaming of their video conference by just including the video streaming room in their conference;
- We plan on testing with CD, D0, CDF, BTeV, et al.;
- Equipment needed estimated to be just under $25K per “virtual” conference room;
- Level of coordination with VMS/Fred Ulrich?

Video Conferencing VRVS Advantages

- Desktop flexibility using “free” tools or conference room;
- Ability to see & listen to meetings without camera & microphone;
- Bridging done in software - low equipment cost;
- Good set up documentation;
- Allows impromptu meetings;
- Less video conference coordinator involvement in reserving resources.

Video Conferencing VRVS Disadvantages

- Utilizes non standards-based IP tools;
- User complaints of poor audio and/or video quality and drop outs;
- Teleconference bridges used to replace poor audio;
  - IP video conference with long distance charges for voice.
- User complaints of instability;
- In the FNAL conference rooms a (user provided) browser is needed to start VRVS;
- No automatic notification for onsite conference room support;
- No troubleshooting tools for VCC.

Video Conferencing ESnet ECS Advantages

- Can be used from desktops or conference rooms;
- Uniform video and audio quality due to standards-based systems with echo cancellation;
- Mixed ISDN/IP capability (limited IP capacity);
- Ad-Hoc and Mixed Bridge supports phone dial in;
- E-mail notification to users & support personnel;
- Less VCC involvement in reserving resources for IP based conferences.

Video Conferencing ESnet ECS Disadvantages

- Restrictive registration process due to DoE funding of ESnet ECS services. All users must agree to Acceptable User Policy;
- No concept of interactive IP guest users;
  - All IP users must be registered to use resources;
  - Video Streaming may offer a work around.
- Resources for all-IP bridged meetings cannot be reserved – Ad-Hoc bridge is first come first served;
- Standards-based hardware clients required. Enforced by ESnet room registration process.

Video Conferencing Access Grid

- At least $50K (estimate from ANL) investment to appoint an Access Grid room at Fermilab;
- FCC1 retrofit would be somewhat less (due to existing equipment & displays);
- Also need a (part/full) time operator depending on number of meetings;
- Does not appear to be feasible this FY.

Video Conferencing Gatekeeper

- The gatekeeper is the centralized “address book/ directory” for the video conference “rooms”.
- We’re currently using ESnet’s gatekeeper for H.323/IP video.
- A gatekeeper can support 200-250 “rooms”.
- As the number of on-site desktop IP video conference users increase we see a need for a H.323 gatekeeper at Fermilab.
- Hardware and software for a FNAL gatekeeper will be ~$21K and operational support will be significant (0.5 to 1.0 clerk FTE).

Video Conferencing Fin

- Questions?